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मानक

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IS 326-5 (2006): Methods of sampling and test for natural and synthetic perfumery materials : Part 5 Determination of relative density [PCD 18: Natural and Synthetic Fragrance Materials]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

नमूने लेने और परीक्षण की पद्धतियाँ प्राकृतिक और
संश्लेषित सुगन्ध सामग्री

भाग 5 अपवर्तनांक ज्ञात करना

(तीसरा पुनरीक्षण)

Indian Standard

**METHODS OF SAMPLING AND TEST FOR
NATURAL AND SYNTHETIC PERFUMERY
MATERIALS**

PART 5 DETERMINATION OF REFRACTIVE INDEX

(Third Revision)

ICS 71.100.60

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BUREAU OF INDIAN STANDARDS
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NATIONAL FOREWORD

This Indian Standard (Part 5) (Third Revision) which is identical with ISO 280 : 1998 'Essential oils — Determination of refractive index' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Natural and Synthetic Fragrance Materials Sectional Committee and approval of the Petroleum, Coal and Related Products Division Council.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

The technical committee responsible for the preparation of this standard has reviewed the provisions of ISO 356 'Essential oils — Preparation of test samples' and decided that it is acceptable for use in conjunction with this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

METHODS OF SAMPLING AND TEST FOR NATURAL AND SYNTHETIC PERFUMERY MATERIALS

PART 5 DETERMINATION OF REFRACTIVE INDEX

(*Third Revision*)

1 Scope

This International Standard specifies a method for the determination of the refractive index of essential oils.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 356, *Essential oils — Preparation of test samples*.

3 Term and definition

For the purposes of this International Standard, the following term and definition apply.

3.1

refractive index, n_D^t

ratio of the sine of the angle of incidence to the sine of the angle of refraction, when a ray of light of defined wavelength passes from air into the essential oil kept at a constant temperature

NOTE The wavelength specified is 589,3 nm \pm 0,3 nm corresponding to the D₁ and D₂ lines of the sodium spectrum.

4 Principle

According to the type of instrument used, either the angle of refraction is directly measured or the limit of total reflection is observed, the oil being maintained under conditions of isotropism and transparency.

5 Reagents

5.1 **Standard products**, of refractometry grade, to adjust the refractometer, as follows.

- 5.1.1 **Distilled water**, of refractive index 1,333 0 at 20 °C.
- 5.1.2 ***p*-Cymene**, of refractive index 1,490 6 at 20 °C.
- 5.1.3 **Benzyl benzoate**, of refractive index 1,568 5 at 20 °C.
- 5.1.4 **1-Bromonaphthalene**, of refractive index 1,658 5 at 20 °C.

6 Apparatus

- 6.1 **Refractometer**, allowing direct readings of refractive indices between 1,300 0 and 1,700 0 to be made with an accuracy of $\pm 0,000\ 2$.
- 6.2 **Thermostat or apparatus for temperature maintenance**, which ensures a circulation of water through the refractometer, thus keeping the instrument at the reference temperature to within $\pm 0,2\ ^\circ\text{C}$.
- 6.3 **Light source**, sodium light.

NOTE Diffused daylight or light from an electric lamp may be used for refractometers fitted with an achromatic compensator.

- 6.4 **Plate of glass** (optional), of known refractive index.

7 Sampling

It is important that the laboratory receive a representative sample which has not been damaged or modified during transportation or storage.

Sampling does not constitute a part of the method specified in this International Standard. A recommended sampling method is given in ISO 212.¹⁾

8 Procedure

8.1 Preparation of test sample

Prepare the test sample in accordance with ISO 356. Bring the test sample to the temperature at which the measurements shall be made.

8.2 Regulation of the refractometer

8.2.1 Regulate the refractometer (6.1) by measuring the refractive index of the standard products described in 5.1.1 to 5.1.4.

NOTE Some instruments may be adjusted by means of a plate of glass (6.4), according to the directions supplied by the manufacturer of the instrument.

1) ISO 212, *Essential oils — Sampling*.

8.2.2 Verify that the refractometer (6.1) is maintained at the temperature at which the readings shall be made.

This temperature shall not differ from the reference temperature by more than $\pm 0,2$ °C during the test.

The reference temperature is 20 °C, except for those oils which are not liquid at this temperature, in which case a temperature of 25 °C or 30 °C, depending on the melting point of these essential oils, shall be used.

9 Determination

Place the test sample, prepared according to 8.1, in the refractometer. Wait until the temperature is stable and make the measurements.

10 Calculation

The refractive index n_D^t , at the specified temperature t , is given by the equation:

$$n_D^t = n_D^{t'} + 0,0004(t' - t)$$

where $n_D^{t'}$ is the reading taken at the working temperature t' at which the determination was actually made.

Express the result to four decimal places.

11 Repeatability

The absolute difference between two independent single test results, obtained using the same method on an identical essential oil in the same laboratory by the same operator using the same equipment within a short interval of time, will in not more than 5 % of cases be greater than $\pm 0,000\ 2$.

12 Test report

The test report shall state:

- all details necessary for the complete identification of the sample;
- the sampling method used, if known;
- the test method used, with reference to this International Standard;
- all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the test result;
- the test result obtained;
- if repeatability has been checked, the final quoted result obtained.

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Amendments Issued Since Publication

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